

related to the axis of astigmatism to be reduced, and wherein the width of said rectangular area varies from one to the next rectangular area; whereby the cumulative penetration of the cornea for both said areas effects an astigmatism-correcting change in the curvature of the cornea.

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*C²
Cont'd.*

28. Apparatus for performing ophthalmological surgery by selective ablation of the anterior surface of the cornea with varied penetration up to a predetermined maximum penetration into the stroma to achieve a cylindrical astigmatism-reducing anterior-curvature change by volumetric removal of tissue within the optically functioning area of the cornea, said apparatus comprising: a laser producing a laser beam in the ultraviolet region of the electromagnetic spectrum; means for shaping, focusing and directing the beam toward the eye with an intensity to produce tissue penetration to a depth per unit time exposure which is but a fraction of said predetermined maximum; said means including means for selectively first determining and controlling a first rectangular area of exposure to the extent of at least said fractional depth and thereafter determining and controlling a second and different rectangular area of exposure to the extent of at least said fractional depth, each said rectangular areas being symmetrically disposed on opposite sides of one and the same meridian of the cornea and within the optically functioning area of the cornea, wherein said meridian is selectable for orientation related to the axis of astigmatism to be reduced, and wherein the width of said rectangular area varies from one to the next rectangular area; whereby the cumulative penetration of the cornea for both said areas effects an astigmatism-correcting change in the curvature of the cornea.

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REMARKS

The present amendment of claims limits the currently claimed subject matter to apparatus for ultraviolet-laser sculpture of the anterior surface of the cornea to effect a cylindrical curvature correction, in reduction of an astigmatism.

The specific amendments to claims 7 to 10 are closely analogous to those for myopia/hyperopia and like spherical corrections, in the claims of applicant's copending related case, namely, Serial No. 746,330, which is the apparatus divisional of applicant's original disclosure, in November 1983.

New claims 25 and 26 track claims 6 and 9 respectively, except that "control means" is specified instead of the "microprocessor" means of claims 7 and 9. And new claims 28 and 29 more broadly state applicant's apparatus, first in terms of a pulsed laser (claim 27) and then without specifying that the laser is pulsed (claim 28); in both cases, the apparatus is defined in such manner as to expose for tissue penetration which is to at least a given fractional depth for a first rectangular area before similar exposure for a second rectangular area, wherein the areas are of different width but specifically oriented in relation to the axis of astigmatism to be reduced.

The nature of art currently relied upon by the Examiner in his Section 103 rejection of claims overlaps and repeats art which had been applied in rejection of the claims of said application Serial No. 746,330, but in an interview held April 16, 1987 with the Examiner, such art was held "not sufficient to anticipate the claimed invention", per the Examiner's Interview Summary Record, copy attached.


In the circumstances, we have not repeated our rebuttal of Section 103 rejections of record herein. Rather, we request that these rejections be withdrawn, for at least the reason that, however the references are combined, there is no prior-art suggestion that the visually used part of a cornea could usefully be laser-sculptured to reduce an astigmatism or other optically defective condition of the cornea. As far as we know of this art, Dr. L'Esperance, the present inventor, is alone to be credited with first disclosure of this concept.

The claims are believed to be allowable, and if an additional-claims fee is deemed to be applicable, we authorize a charge, as appropriate, to our firm Deposit Account No. 08-2776.

Encl.

Respectfully submitted,

By


Roy C. Hopgood
Reg. No. 15,245
Attorney for Applicant
212-986-2480